

Digitalization in Transport and Logistics Services: --- A Case for Data Flows

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Digitalization in Transport and Logistics Services

- While transport services require physical delivery, digitalization is transforming the sector along the transport supply chain:
 - Vehicle/ship design;
 - Infrastructure: road, bridges, tunnels, rail, ports, terminals;
 - Transport operation (e.g. capacity allocation, cargo management, shipment tracking and tracing, customer services, etc.)
 - Intermediary services;
 - Supporting services: warehousing, monitoring and inspection;
 - Maintenance and repair of transport equipment;
 - Information and documents transmission among multi-players (shippers, shipping lines, port authority, the Customs, terminal operators, etc.)

Common features of digital trends

- Higher level of **automation**;
- Better and broader **connectivity**;
- Main **digital technologies** and solutions: Internet of Things, cloud computing, big data analytics, automation and robotics, artificial intelligence;
- **Digital platforms** become a new business model, which enable innovative transport services or more efficient supply of services and increase tradability of services;
- **Data-driven** approach become dominant for both businesses and regulators;
- **Digital synergies** between transport/logistics services and other service sectors: digital transformation of transport and logistics services relies on the support of other services, but also boosts the latter's advances, such as: telecom, CRS, construction and engineering, energy, environment, and other business services.

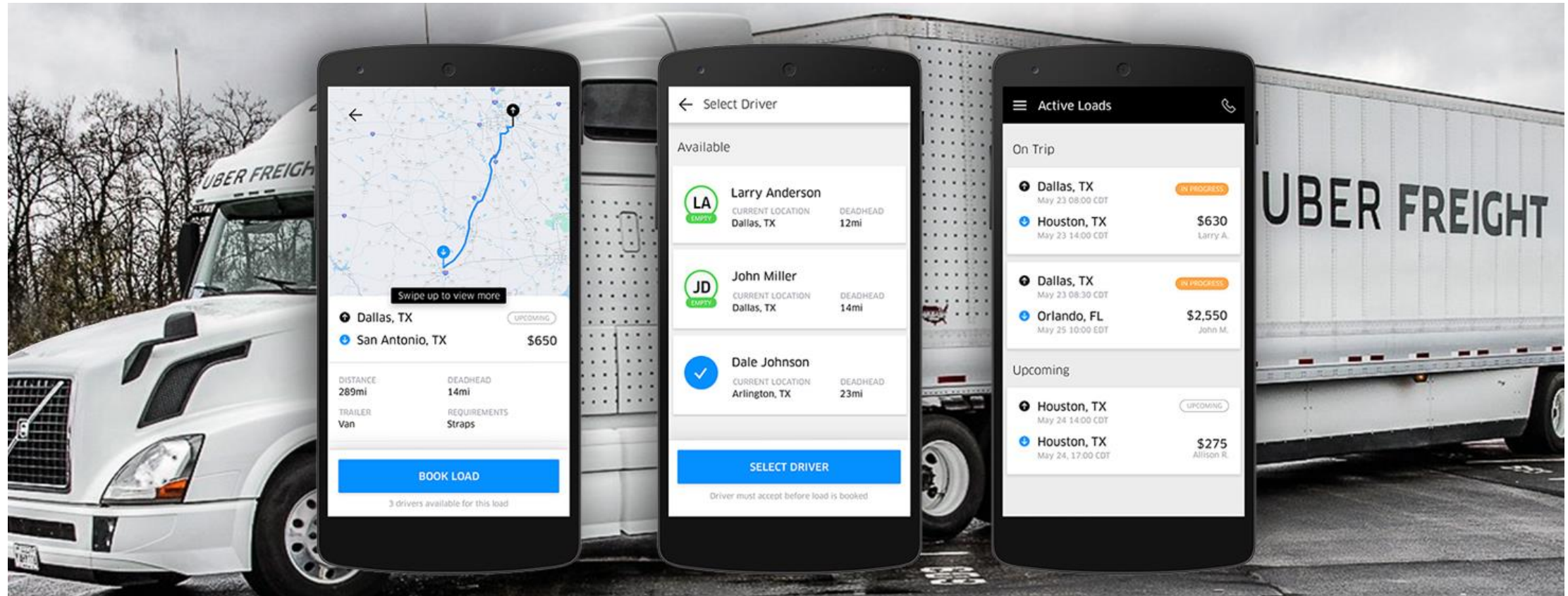
Digitalization in road transport



- Higher levels of automation: platooning, autonomous vehicles
- Intelligent Transport System (ITS): wide deployment of road-side and in-vehicle sensors combined with Big Data analytics allows real-time and fine-grained tracking so as to enable better management of vehicles and loads.
- Digital freight brokerage services: Load-matching platforms, e.g. Uber freight



Uber freight, a digital load-matching platform connecting carriers and shippers

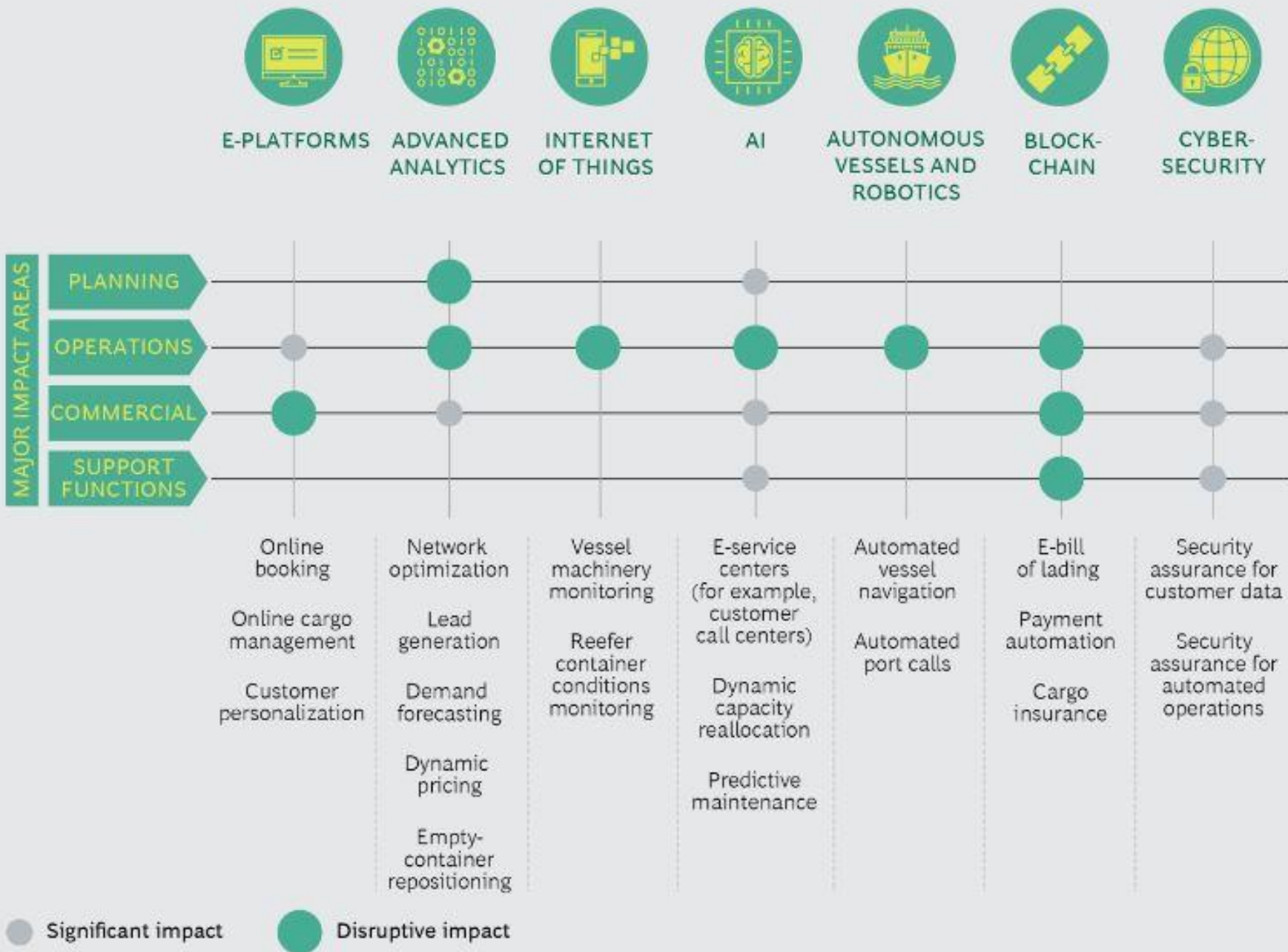


Digitalization in maritime transport

- Online booking and online cargo management
- Tracking and tracing of shipments
- Routs optimization
- Autonomous vessels



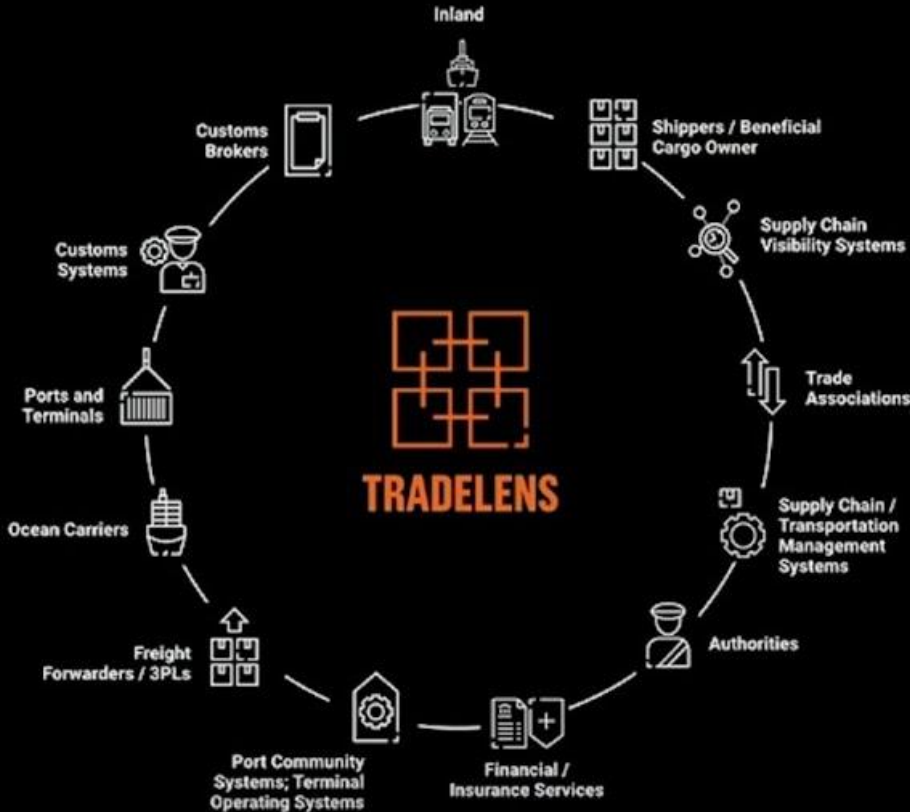
EXHIBIT 2 | Seven Digital Trends Will Transform Container Shipping



TradeLens, a blockchain-enabled digital container logistics platform jointly launched by Maersk and IBM

DIGITIZING THE GLOBAL SUPPLY CHAIN

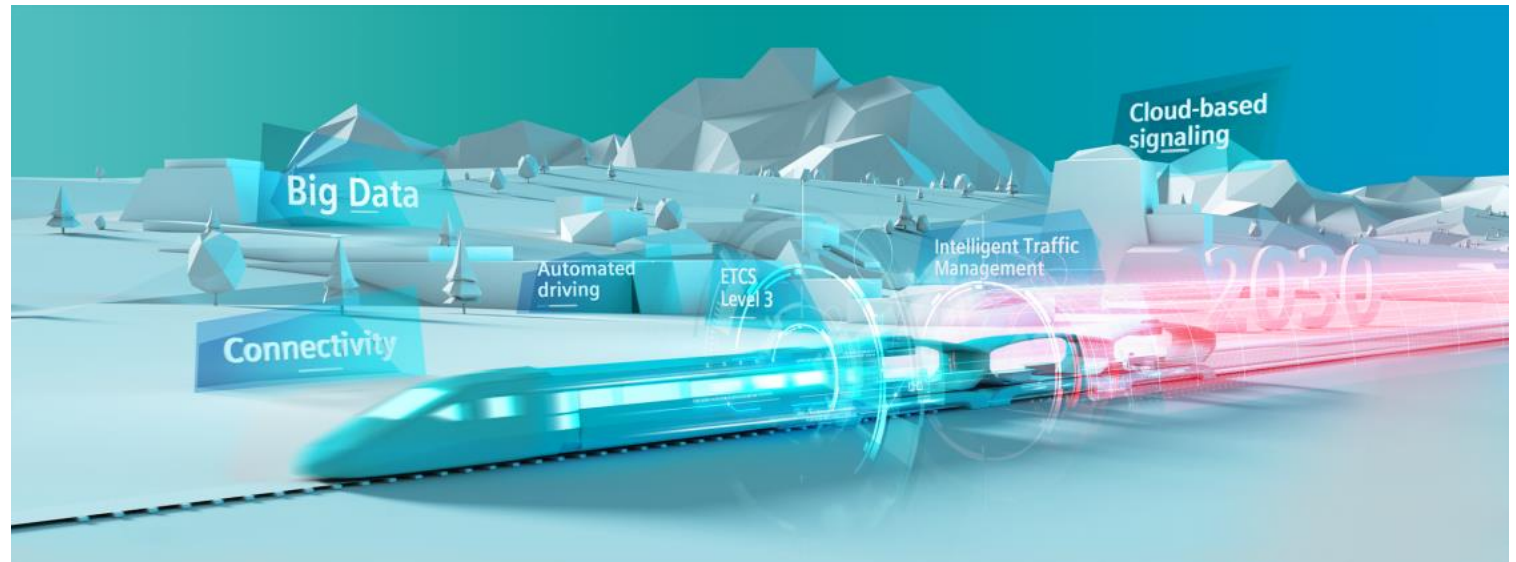
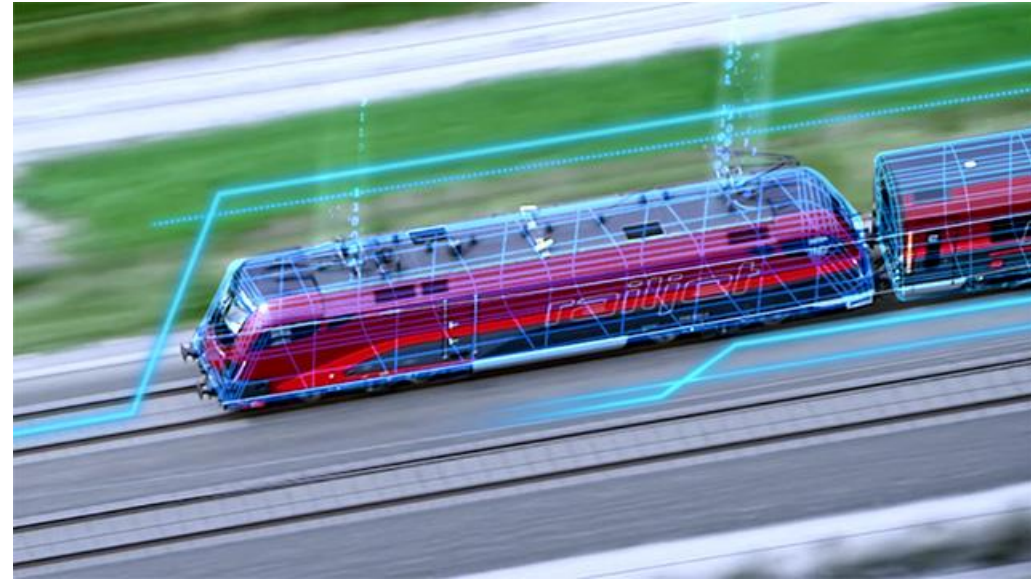
- 1. Connects the entire ecosystem
- 2. Drives true information sharing
- 3. Fosters collaboration and trust
- 4. Spurs innovation



TRADELENS

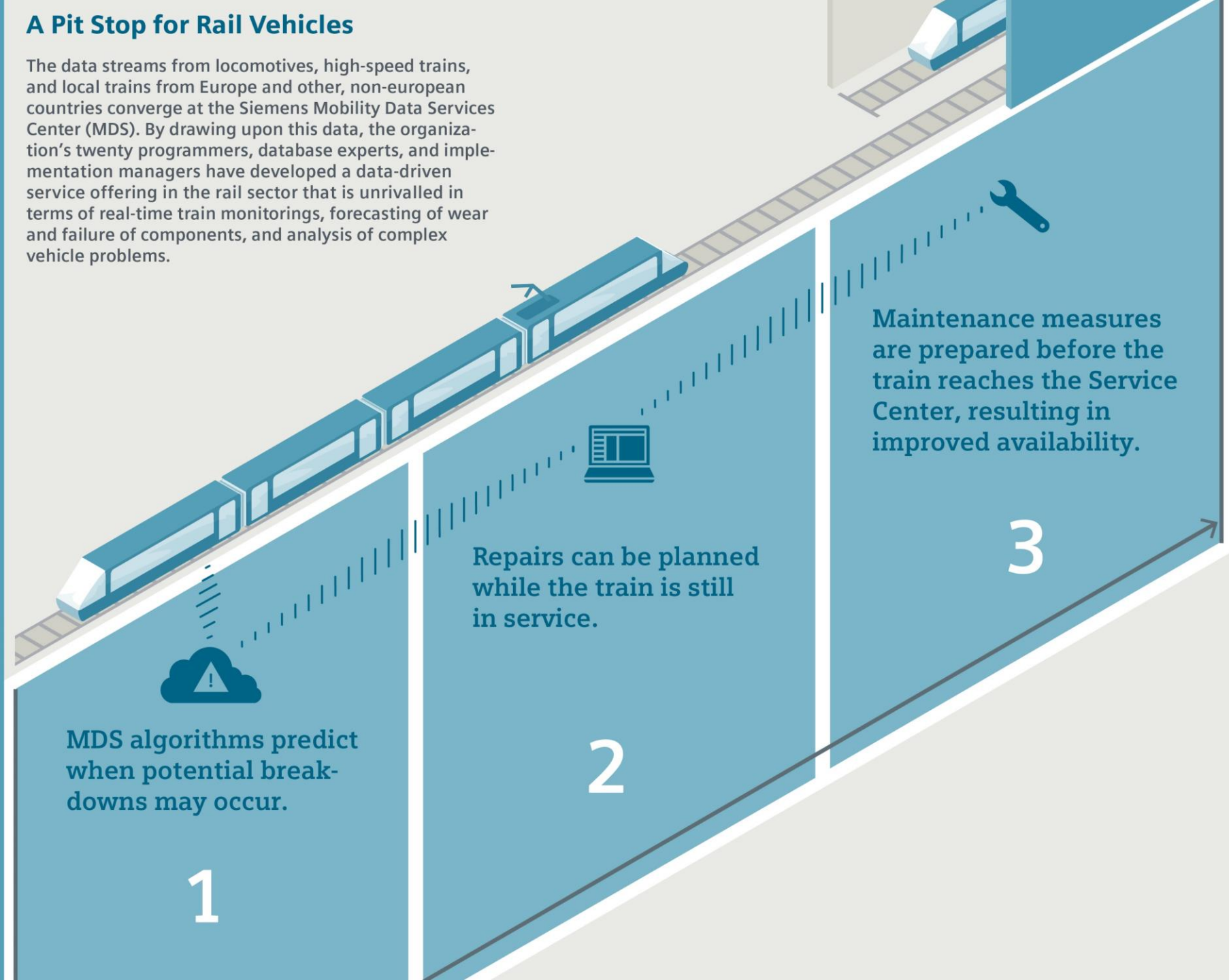
Digitalization in rail transport

- Autonomous trains
- Signalling and traffic management
- Digital train control
- Digital platforms for predictive maintenance and reparation
- E-ticketing



A Pit Stop for Rail Vehicles

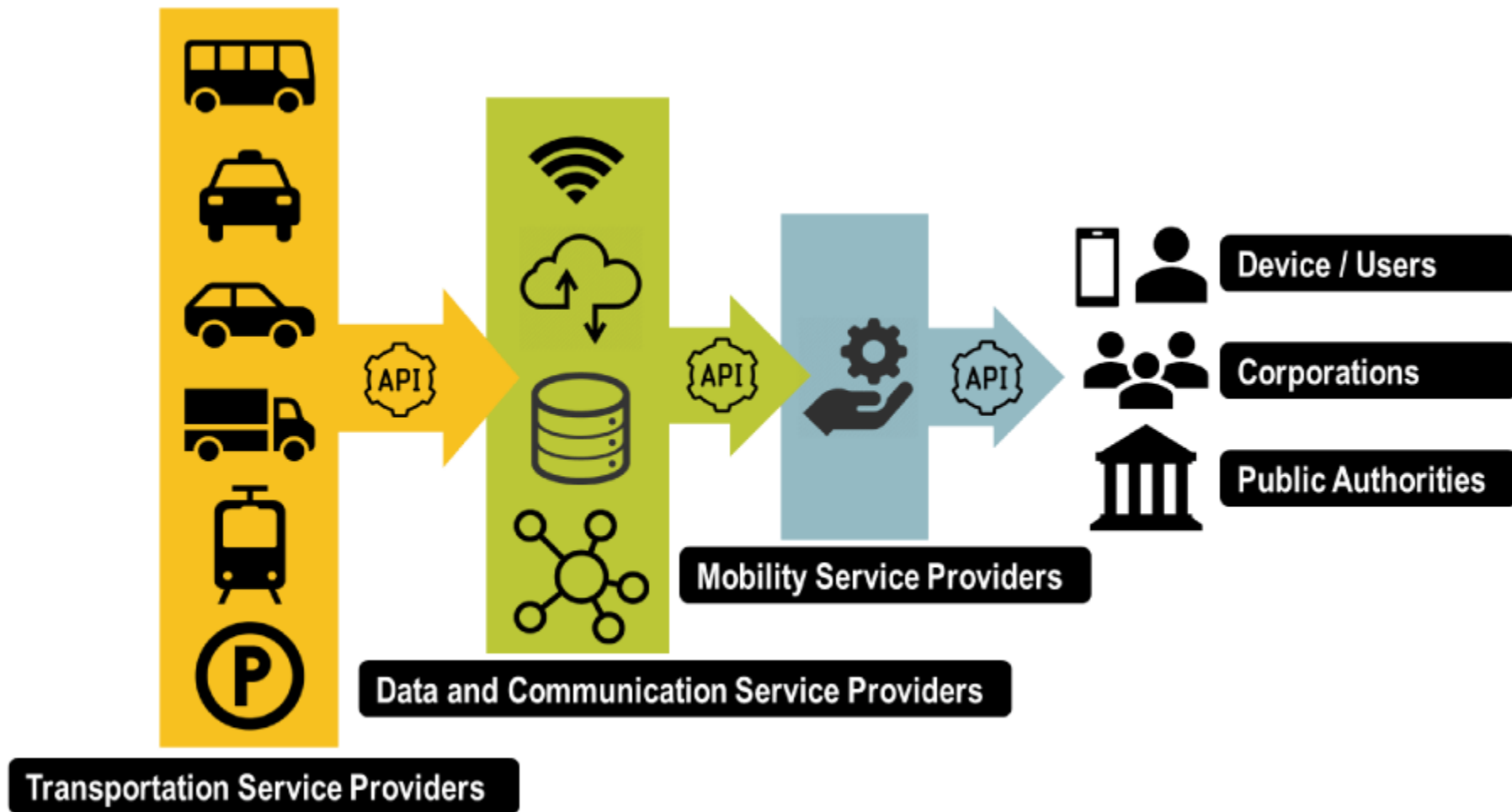
The data streams from locomotives, high-speed trains, and local trains from Europe and other, non-european countries converge at the Siemens Mobility Data Services Center (MDS). By drawing upon this data, the organization's twenty programmers, database experts, and implementation managers have developed a data-driven service offering in the rail sector that is unrivalled in terms of real-time train monitorings, forecasting of wear and failure of components, and analysis of complex vehicle problems.



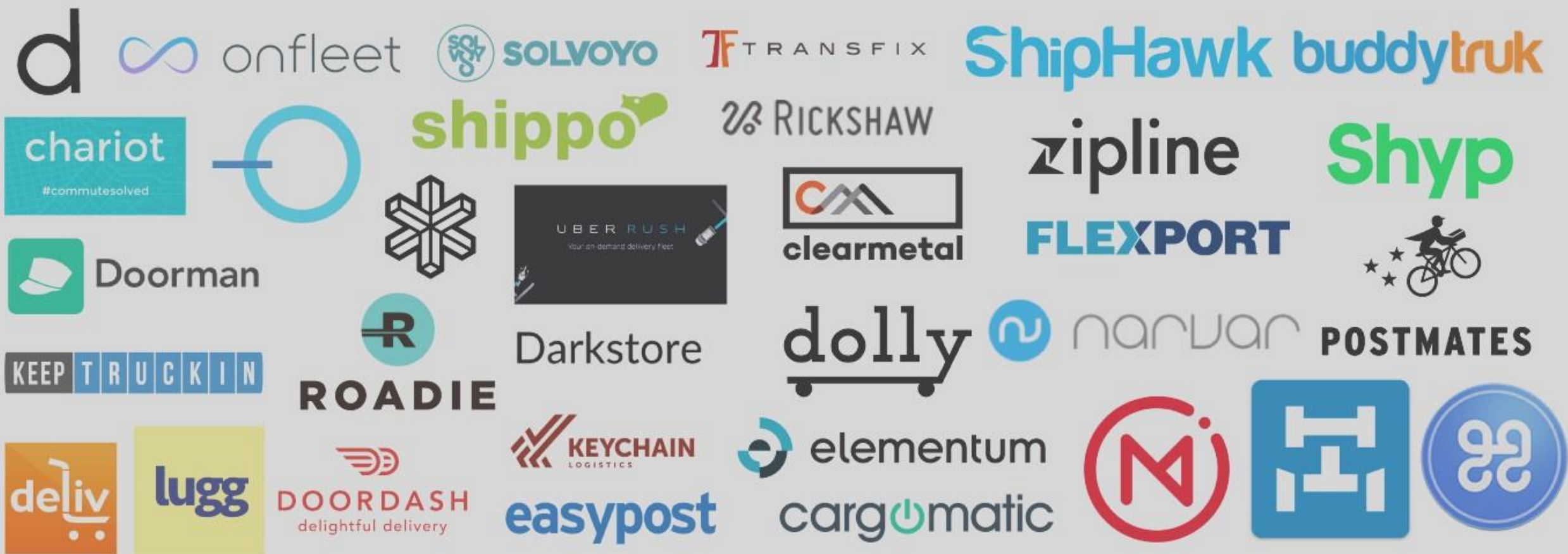
Digitalization in urban transport

- Digital technologies (e.g. AI, IoT, automation, Big Data Analytics, etc.) provides possibility to address chronic urban transport problems, e.g. traffic jams; lack of choice for consumers; inefficient utilization of vehicles and space; pollution; etc.
 - Data collection and data analytics help better identify causes of problems and find solutions;
 - Data-driven new public transport services: e.g. Via Van, US-German joint venture, on-demand, dynamic, data-driven public mobility – global reach, distinguished from ride-hailing and on-demand transit, relying on public-private partnership;
 - Digital platform enabled innovations, e.g. ride-hailing and car-sharing: Uber, Didi; bike/scooter sharing

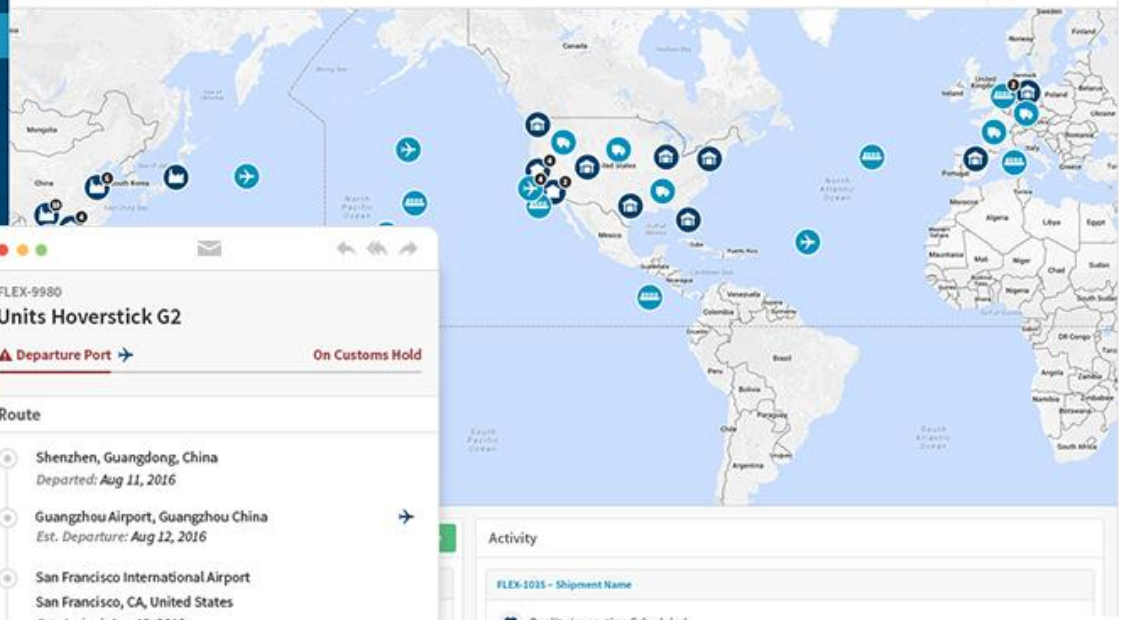
Mobility as a Service (MaaS)



Digitalization in logistics services



- DASHBOARD
- SHIPMENTS
- QUOTES
- PRODUCTS
- NETWORK
- REPORTS
- BILLING
- SETTINGS



FLEX-9980
Units Hoverstick G2

Departure Port → **On Customs Hold**

Route

- Shenzhen, Guangdong, China
Departed: Aug 11, 2016
- Guangzhou Airport, Guangzhou China
Est. Departure: Aug 12, 2016
- San Francisco International Airport
San Francisco, CA, United States
Est. Arrival: Aug 13, 2016
- Palo Alto, CA, United States
Est. Arrival: Aug 14, 2016

Invoice Value	Freight Spend	Customs Spend
\$50,492.38	\$6,923.98	\$1,540.45

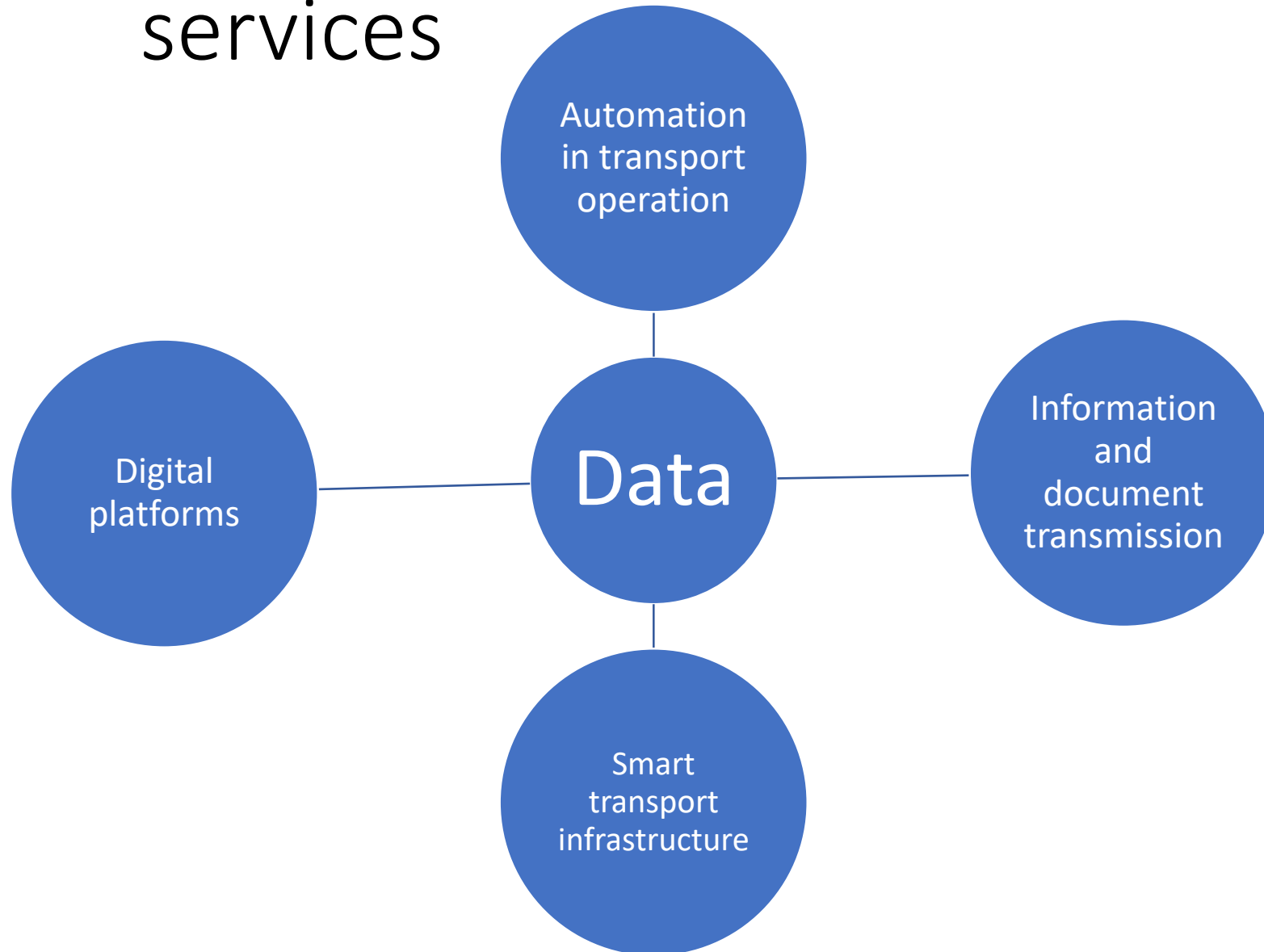
Activity

FLEX-1035 - Shipment Name

- Quality Inspection Scheduled
- ✓ Picked Up From Seller
- ✓ Ready For Pickup



Data at the centre of transport and logistics services



"The digitization of transport is about creating new paradigms in the visualization and capitalization of data, of a given system and to use that knowledge to build a more optimized and maintainable infrastructures."
- McKinsey

Digital transformation in transport and logistics: Policy implications

- Data is crucial not only for the operation of business, but also for governance and policy-making in the age of digitalization;
- Some other issues also become prominent: interoperability between different systems, harmonization of individual digitalization initiatives, standardization, safety, cybersecurity, etc.
- Synergies with other sectors require a holistic digital strategy to build a supportive ecosystem;
- Disruptive effects of digitalization on incumbent services and service suppliers require balancing policies and regulations;
- Policies and regulatory framework should foster innovations which are not only sources of competitiveness, but also beneficial to public good.

THANK YOU

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